

PRELIMINARY AMENDMENT  
Con of U.S. Appln. No. 09/246,145

A2  
luminescent material, UV light 44 is provided by one optical fiber 32 to sensitize the luminescent material 36, located between the optical fibers 32. To cause the luminescent material 36, to emit visible light, IR light is provided by the other optical fiber 32. Ideally, a mirror 48 may be used to increase the amount of UV light 44 that reaches the luminescent material 36 reduce the amount of visible light emitted by the luminescent material entering the optical fiber 32 having the mirror 48. A mirror 48 is not used on the other optical fiber 32 because the visible light shines through this optical fiber 32 for viewing. The direction of viewing of the device in Figure 8 is shown by arrow A

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A3  
Figure 10 shows an optical luminescent display device 150 which has a structure similar to that shown in Figure 8, accept that, by way of example, a different notch 152 configuration is shown. A variety of combinations of notch shape and location are possible Figure 11 adds reflective filter 154. The reflective filter 154 can be configured to allow UV light 44 to pass, but reflect visible light. This would enhance the visible light emitted from the luminescent material 36 in the direction of the viewer. The direction of viewing is shown by arrow A. Notch 152 may be open or filled with filling material 38.

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A4  
Figure 12 shows an optical luminescent display device 180 which has a notch 182 containing a reflection pyramid 190. The reflection pyramid 190 is ideally formed with its peak set in form the edge of the optical fiber 32, to distribute radiation to the luminescent material 36, as shown by the exemplary small arrows, regardless of the direction from which the radiation is

provided. The reflection pyramid 190 can be inserted into the notch 182, or the notch 182 can be formed with an inner edge forming a reflection pyramid 190. The area 192 within the notch 182 may be left open or, preferably, filled with a filling material. The optional dichroic filter 186 increases the amount of IR light 46 and discharge UV light 188 directed toward the luminescent material 36. However, visible light is allowed to pass through to the viewer, which is viewing in the direction of the arrow A. Discharge UV light 188 is provided to adjust the charge within the luminescent material 36. The discharge UV light 188, at a wavelength of between 200 and 380 nm, increases the charge of the luminescent material 36 so as to prevent or discontinue the emission of visible light from the luminescent material 36. This, in essence, restarts the sensitizing/excitation process of the luminescent material 36. Another process of applying UV light 44 can be followed by IR light 46 to result in the emission of visible light by the luminescent material 36. See Figures 21 and 22 as examples of timing charts that could be used in the application of discharge UV light 188, IR light 46, and UV light 44. The timing of Figure 22 is preferred over that of Figure 21, because the UV light has time to sensitize the luminescent material prior to the application of the exciting IR light.

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Figure 13 shows an optical luminescent display device 210 which has notches 212 formed on the outer sides of the optical fibers 32. Figure 14 adds a dichroic filter 186. The dichroic filter 186 reflects UV light and IR light, but allows visible light to pass. The dichroic filter 186 increases the amount of IR light 46 and discharge UV light 188 directed toward the luminescent material 36. However, visible light is allowed to pass to the viewer, who is viewing